

REMARKS

New Claims 45-90 have been added and claims 1-44 have been cancelled. These new claims do not contain any new matter. For example, new independent claims 45 and 68 are supported by Figure 2 and on page 6, lines 6-13, among other places. Dependent claims 46-47 and 69-70 are supported by Figures 4a and 4b and the accompanying text. The remaining dependent claims are supported by the originally filed claims, among other places. Claims 45-90 remain pending.

The Examiner has rejected claims 1-20, 40-42 and 44 under 35 U.S.C. §112, second paragraph, as being indefinite. These claims have been cancelled and, accordingly, this rejection is moot.

The Examiner rejected claims 1-9, 13-29 and 33-44 under 35 U.S.C. §102(e) as being anticipated by Lin (U.S. patent 6,292,582). The Examiner has also rejected claims 10, 11, 30 and 31 under 35 U.S.C. §103(a) as being unpatentable over Lin and further in view of an article by Kohonen, entitled "The Self-Organized Map." These rejections are also considered moot in light of the new claims.

Claim 45 is directed towards "a method for classifying a plurality of images." Claim 45 further recites providing a working set of images" and "prior to a user performing any classification of the working set of images, automatically sorting the working set of images into a plurality of groupings based on common features of the working set of images and displaying such groupings." Claims 45 also requires "after automatically sorting the working set of images into groupings, receiving input from the user to manually classify at least a subset of the working set of images facilitated by the displayed groupings." Claim 68 recites software portions that are configured to perform the steps of claim 1. That is, the images are automatically sorted and displayed prior to the user performing any manual classification. Embodiments of the present invention advantageously allow a user to more efficiently manually classify defects since the defects are pre-sorted. For example, a user may choose to manually classify one or two defects in each pre-sorted group. Thus, the user is more likely to classify a wider variety of defects.


In contrast, Lin is directed towards a conventional automatic defect classification system. Lin teaches that defects are manually classified by a user to build a knowledge base, and this training set is then used by the ADC to automatically classify the remaining defects. Specifically, Lin teaches that "the expert operator or the automated knowledgebase analyzer 48 selects images that are typical examples of each type of defects and provides a classification number for each example (step 306)." This information is then stored in a knowledgebase (step 308). The remaining defects may then be compared to classified defects in the knowledgebase to

determine the remaining defects' classification. See Col. 20, Lines 16-20. It should be noted that the reference to an automated knowledgebase analyzer 48 merely refers to a mechanism for editing the knowledgebase, weighting feature descriptors, and providing a mean or deviation value for the descriptors. See Col. 8, Lines 42-48. In other words, this analyzer 48 merely provides a mechanism for enhancing the use of the manually classified knowledgebase. That is, the automated knowledgebase analyzer 48 is applied after manual classification occurs. Likewise, an automated classification procedure that uses a knowledgebase occurs after the user manually classifies defects to form the knowledgebase. Although Lin teaches a manual classification procedure for generating a knowledgebase that is performed prior to an automatic classification procedure and prior to an automated knowledgebase enhancement procedure (analyzer 48), Lin fails to teach automatically sorting images into groupings and displaying such groupings prior to manual classification by a user, in the manner claimed. Accordingly, it is respectfully submitted that claims 45 and 68 are patentable over Lin.

Claims 46-67 and 69-90 each depend directly or indirectly from independent claims 45 or 68 and, therefore, are respectfully submitted to be patentable over cited art for at least the reasons set forth above with respect to claims 45 and 68. For example, claim 55 recites that "the common features used during the automatic sorting include defect coordinates in wafers." Further, the dependent claims require additional elements that when considered in context of the claimed inventions further patentably distinguish the invention from the cited art. For example, the images can be automatically presorted and displayed in groups corresponding to wafer area. This technique would allow defects that are location dependent, such as scratches, to be easily seen by the user prior to manually classifying such defects.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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